Nontraditional Families and Childhood Progress Through School: A Comment on Rosenfeld

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Abstract We reexamine Rosenfeld's (2010) study on the association between child outcomes and same-sex family structure. Using the same data set, we replicate and generalize Rosenfeld's findings and show that the implications of his study are different when using either alternative comparison groups or alternative sample restrictions. Compared with traditional married households, we find that children being raised by same-sex couples are 35 % less likely to make normal progress through school; this difference is statistically significant at the 1 % level.

Keywords School progress · Gay and lesbian families

Introduction

Although there has been considerable research on the effect of family structure on child outcomes, almost none of the research using nationally representative samples has included same-sex parents as part of the analysis. The main barrier is the lack of a nationally representative data set with enough children being raised by same-sex couples to provide a basis for meaningful statistical inference. The one U.S. data set that currently provides enough data to conduct this analysis is the U.S. Public-Use Microdata Sample of the decennial census.

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Rosenfeld (2010) used data from the 2000 census 5 % Public-Use Microdata Sample to examine the association between same-sex parenting and child outcomes (as measured by normal school progress). His study concluded that the outcomes of children raised by same-sex couples "cannot be distinguished with statistical certainty from children of heterosexual married couples" (p. 770). However, our findings suggest a reevaluation of this conclusion. We present an alternative approach that updates the original study with important estimates of the magnitude of the effect sizes and their corresponding confidence intervals. We also provide a model that allows for robustness checks to the sample restrictions employed in the original study.

Our analysis proceeds in two parts. First, we show that the omitted group chosen for the regression itself informs the interpretation of the data because statistical precision is low. An alternative omitted variable leads to the finding that the outcomes of children raised by same-sex couples cannot be distinguished with statistical certainty from almost any other family structure, including well-documented disadvantaged groups, such as children being raised by a never-married mother. We also update the original study by providing standard errors and odds ratios for each of the coefficients. These two additions to the original study provide insight into the magnitude of the differences between groups and the size of the confidence intervals around these differences.

Second, we present an unrestricted model as a robustness check on the original findings by incorporating controls for the subgroups that Rosenfeld identifies as potential confounders. These subgroups are those in which the children in the sample are not biologically related to the household head (e.g., adopted children and stepchildren) and those in which the children and parents have not lived in the same residence for the previous five years. However, while we share Rosenfeld's concern that these groups are potential confounders, the use of a restricted model both eliminates two of the channels through which family structure might actually affect child outcomes and reduces the sample by 55 %, thus making the standard errors sufficiently imprecise to detect a statistically significant difference. We present an alternative approach that accommodates the various concerns by incorporating controls for the subgroups into an unrestricted model. With this approach, we recreate the original results on the restricted sample and compare them to the more precise results from the unrestricted model with controls.

Alternative Comparisons and the Magnitude of the Effect Sizes

Table 1 provides descriptive statistics for the children in the sample by family structure type. The outcome variable is whether the child is making normal progress through school and is based on a comparison of the child's age and current grade in school. This measure has been used in past studies because it is the only measure of child outcomes in the U.S. census data (Cáceres-Delpiano 2006; Conley and Glauber 2006) and it is correlated with other outcomes later in life, such as dropping out of high school (Eide and Showalter 2001). The fraction of children who are not making normal progress in schools varies from 1.83 % to 3.08 % across the different family structure types.

Table 1 provides the sample means for each of the control variables used in the regressions for each of the family structure types. The variables for "own child" (R_1) and "same location for 5 or more years" (R_2) are used to model the effects of the subset restrictions of interest.

Table 2, column 1, merely replicates the findings from the original study when the omitted group is children being raised by heterosexual married couples. Thus, all coefficients in column 1 provide inferences about the difference in outcomes between children being raised by heterosexual married couples and those in the other six family types. These results provide the basis for the original study's conclusion that children being raised by homosexual partners cannot be distinguished with statistical certainty from children of heterosexual married couples. However, there are good reasons to reevaluate this finding.

First, the magnitude of the coefficient for children raised in same-sex households is similar to that of never-married women, a family structure type which is documented to have worse child outcomes relative to married heterosexual couples. These alternative comparisons are difficult using the results of the original study because the main regression tables do not include the standard errors on the regression coefficients. One way to make these comparisons more transparent is to have the main group of interest (children of same-sex couples) be the omitted group in the regression, which is what we do in the second column of Table 2. The first coefficient is the same in column 1 and 2, since this particular comparison is the same when we switch which of the two is the omitted group. However, the rest of the coefficients now provide inferences about the difference between the reported group and same-sex households. These results highlight that an equally valid interpretation of the original study is that the outcomes of children in same-sex households cannot be determined with statistical certainty from those of children in almost any other family type (except divorced men).

Table 1 Summary statistics for households with children (2000 census)

	Heterosexual Married	Same-Sex Couples	Heterosexual Cohabiting	Divorced Women	Never-Married Women	Divorced Men	Never-Married Men
Median Income ($)	58,000	48,820	40,250	24,000	15,900	35,800	29,000
% of Children Who Are:							
"Own" children (R_1)	85.7	82.3	83.1	91.7	97.8	87.8	90.9
Stepchildren	7.27	8.32	12.37	0.26	0.22	2.08	5.41
Foster children	0.32	0.81	0.97	0.76	0	0.35	0
Adopted	2.73	3.58	1.45	2.25	1.96	2.47	3.70
Other relation to head	4.03	4.95	2.14	5.02	0	7.32	0
Same location 5+ years (R_2)	52.4	42.2	21.3	39.5	35.3	47.0	37.2
Hispanic	15.8	23.9	23.2	16.7	16.4	12.4	21.2
Non-Hispanic black	8.21	16.6	22.0	24.1	61.8	13.0	34.5
Held back in school	1.83	2.81	2.56	2.76	2.80	3.08	2.59
N	1,189,833	8,632	66,642	215,021	77,879	46,654	6,153

Notes: The unit of observation in this table is the child. All of the results are weighted using the census sampling weights.

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Table 2 Association between family type and making normal progress through school (alternative comparison groups)

	Logistic Regression Coefficients		Odds Ratios	
	(1)	(2)	(3)	(4)
Same-Sex Couples	−0.142	—	0.867	—
	[0.125]		[0.108]	
Heterosexual Married	—	0.142	—	1.153
		[0.125]		[0.144]
Heterosexual, Cohabiting	−0.237**	−0.094	0.789**	0.910
	[0.057]	[0.136]	[0.045]	[0.124]
Separated/Divorced/Widowed Women	−0.315**	−0.173	0.730**	0.841
	[0.026]	[0.127]	[0.019]	[0.107]
Never-Married Women	−0.151**	−0.008	0.860**	0.992
	[0.041]	[0.130]	[0.035]	[0.129]
Separated, Divorced, Widowed Men	−0.399**	−0.257†	0.671**	0.773†
	[0.046]	[0.132]	[0.031]	[0.102]
Never-Married Men	−0.357*	−0.215	0.700*	0.807
	[0.123]	[0.175]	[0.087]	[0.141]
Unweighted N	716,740	716,740	716,740	716,740

Notes: Each regression includes controls for disability, race, logged income, highest education in household, birthplace, metropolitan status, private school attendance, and state fixed effects. Standard errors are provided in brackets.

$^\dagger p < .10$; $^*p < .05$; $^{**}p < .01$

The second reason to reevaluate the conclusions of the original study is that the effect sizes are quite large in magnitude despite falling short of statistical significance. The final two columns of Table 2 report the odds ratios that correspond to each of the coefficients from the first two columns. These odds ratios measure the percent difference in likelihood of a child making normal progress in school between children in the omitted group and each of the other groups. For example, column 4 of Table 2 indicates that children in traditional homes are 15 % more likely to make normal progress than children raised in same-sex households. Although this estimate is not statistically significant, the corresponding 95 % confidence interval for the difference ranges from −10 % to +47 %. Thus, while we are unable to reject the hypothesis that there is no difference, this approach also makes it impossible to rule out even very large differences (nearly 50 %).

Robustness Checks and the Unrestricted Model

The original study used a sample in which the children are biologically related to the household head (R_1) and in which the children and parents have been living at the same address for the past five years (R_2). Table 1 provides the fraction of children who are affected by each of these restrictions for each family structure type.

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The motivation for the restrictions is to avoid a measurement error that would occur if a child's family structure is based on a current household composition that is different from what the child had experienced when his or her progress in school was being affected. However, these sample restrictions also cut off two of the channels through which family structure can influence child outcomes: biological relatedness and household instability. The sample restrictions also reduce the sample size by more than one-half, decreasing the precision of the estimates and making detection of a true difference in outcomes more difficult. In the alternative approach adopted here, we test an unrestricted model with the full sample of children but include controls for the important subgroups R_1 and R_2.

To provide a baseline, column 1 of Table 3 presents the same restricted model used in column 4 of Table 2. In this model (as in the original study), both restrictions R_1 and R_2 are in place, but we present the coefficients as odds ratios for ease of interpretation. Column 2 presents a model in which R_1 is left in place while R_2 is relaxed to allow for children to be included who have not been in the same location for five years, though an indicator variable for the subgroup is included in the regression. By relaxing R_2 alone, the sample size increases by more than 80 %, from 716,719 to 1,397,144. The differential for children in heterosexual married households is +25.8 %, which lies squarely within the 95 % confidence interval from the

Table 3 Association between family type and making normal progress through school (varying the sample restrictions)

	(1)	(2)	(3)	(4)
Married Heterosexual	1.153	1.258**	1.295*	1.354**
	[0.144]	[0.097]	[0.137]	[0.089]
Heterosexual, Cohabiting	0.910	1.086	1.057	1.156†
	[0.124]	[0.088]	[0.123]	[0.081]
Divorced Women	0.841	0.955	0.993	1.053
	[0.107]	[0.074]	[0.107]	[0.070]
Never-Married Women	0.992	1.161†	1.140	1.232**
	[0.129]	[0.093]	[0.127]	[0.085]
Divorced Men	0.773†	0.821*	0.895	0.900
	[0.102]	[0.067]	[0.101]	[0.064]
Never-Married Men	0.807	1.096	0.952	1.183
	[0.141]	[0.124]	[0.152]	[0.122]
Sample Restriction				
Own child (R_1)	X	X		
Five-year resident (R_2)	X		X	
Unweighted N	716,740	1,397,188	792,294	1,610,880

Notes: Each cell reports the odds ratio from a logit regression with the omitted group being children being raised by same-sex couples. Each regression includes controls for disability, race, logged income, highest education in household, birthplace, metropolitan status, private school attendance, and state fixed effects. In column 2 we also control for whether the household moved; in column 3 we control for whether a child is the parent's own child; and in column 4 we control for both. Standard errors are provided in brackets.

†$p < .10$; *$p < .05$; **$p < .01$

restricted model (column 1), but the point estimate is larger in magnitude and is statistically significant at the 1 % level.

Column 3 presents a symmetric model in which we reinstitute the five-year location restriction (R_2) but relax the "own-child" restriction (R_1). This restriction removes not only adopted and foster children but any child who is not biologically related to the household head (the majority of which are biologically related to the spouse or partner of the household head). Relaxing R_1 increases the sample size more modestly, from 716,719 to 792,260. In this model, there is a differential of +29 % for children in heterosexual married homes as compared with those in same-sex households. This estimate is statistically significant at the 1 % level.

One potential concern with this specification is that children who are adopted by heterosexual married couples may have a different profile than children who are adopted by same-sex couples. When we exclude adopted children from the regression in column 3, the sample size drops to 770,325 with an estimated differential of +24 %, which is statistically significant at the 5 % level.

The final column of Table 3 presents the unrestricted model in which both sample restrictions are relaxed. This provides estimates utilizing the full sample of 1.6 million children.[1] In this specification, we include controls for the important subgroups, as in the previous two regressions. Here, the differential in the likelihood of making normal school progress is +35 % for children in heterosexual married households, which is statistically significant at the 1 % level.

Two alternative comparisons in this final specification are also illuminating. First, some have suggested that the appropriate comparison for children being raised in same-sex households would be heterosexual cohabiting partners because, at the time of the 2000 census, same-sex couples were unable to obtain a civil marriage. Under this comparison, children who are being raised by a heterosexual cohabiting couple are about 15 % more likely to be making normal progress in school than children being raised by same-sex couples, and this difference is statistically significant at the 5 % level. Second, the three family types that cannot be distinguished with "statistical certainty" from same-sex households—even with the full sample—are divorced men, divorced women, and never-married men.

Conclusion

Together, these findings are strikingly different from those of the original study—and the differences are large enough to be noteworthy. With respect to normal school progress, children residing in same-sex households can be distinguished statistically from those in traditional married homes and in heterosexual cohabiting households. The magnitude of the differences is large enough to be relevant for current and future policy debates, as well as to indicate a real need for more research into the channels through which family structure affects child development and educational outcomes.

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[1] A careful reader might notice that the sum of the increase in the sample size in columns 2 and 3 (680,448 and 75,554) is less than the increase when we relax both restrictions (894,140). The additional 138,138 children are those for whom both restrictions apply.

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